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## “Doing What Only I Can Do”

### Experiences From Participating in a Multimodal Exercise-Based Intervention in Older Patients With Advanced Cancer—A Qualitative Explorative Study

#### KEY WORDS

Advanced cancer

Barriers

Exercise

Experiences

Facilitators

Interviews

Motivation

Older

Qualitative study

**Background:** Sparse evidence exists regarding the feasibility and patients’ experiences of exercise programs among older cancer populations. **Objective:** The aim of this study was to explore the experiences of older patients with advanced cancer who participated in a 12-week supervised and multimodal exercise program in a hospital setting.

**Methods:** Individual interviews were conducted with 18 participants ( $\geq 65$  years) with advanced cancer who completed the intervention program regardless of compliance rate. In addition, written evaluation questionnaires were collected. Data were analyzed using thematic analysis. **Results:** Three main themes were identified: (1) *Motivated to strengthen body and mind*, with the subthemes “Doing what only I can do” and “Reaching goals with support from healthcare professionals and peers”; (2) *Exercise as an integrated part of the treatment course*; and (3) *Overcoming undeniable physical limitations*.

**Conclusions:** The participants experienced several benefits from participation, including physical improvements, increased energy, reduction of symptoms, and improved social engagement. Goal setting, being positively pushed and cheered on, and integration of fun games increased motivation. In contrast, being pushed beyond physical limitations and experiencing severe symptoms were experienced as barriers toward exercising. Adherence to the exercise program was facilitated by coordinating a tailored

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program with medical appointments and receiving comprehensive support and guidance. **Implications for Practice:** Multimodal exercise programs seem to be beneficial for older patients with advanced cancer and should be coordinated with oncological treatment in combination with targeted support and advice on symptom management.

**P**ancreatic cancer (PC), biliary tract cancer (BTC), and non–small cell lung cancer (NSCLC) are most often diagnosed in older patients at an advanced stage. These diagnoses are associated with a high symptom burden and impaired quality of life.<sup>1–3</sup> Physical decline, including loss of body weight and muscle mass, is a frequent complication among patients with PC, BTC, and NSCLC.<sup>4,5</sup> Because of the aging population, the number of older patients with cancer is expected to rise. In older populations, the risk of functional deterioration and disability is increased because of age-related declines in health and reduced reserve capacity.<sup>6</sup> Patients with cancer are generally recommended to stay physically active during cancer treatment to reduce the risk of muscle loss and to maintain physical function.<sup>7–9</sup> Numerous randomized controlled trials (RCTs) have demonstrated that exercise is beneficial for patients with cancer and cancer survivors and can result in improved physical and psychological outcomes.<sup>10</sup> Exercise-based trials, however, have primarily been directed toward patients with localized cancer during or after curative treatment.<sup>11</sup> In addition, most studies have included middle-aged patients with no or limited comorbidity.<sup>11</sup>

Qualitative explorations of cancer patients' experiences from participation in exercise-based programs can provide valuable information regarding the feasibility of these programs. In a qualitative meta-synthesis conducted by Midtgaard et al,<sup>12</sup> results from 8 qualitative studies exploring experiences from cancer patients and survivors who participated in exercise-based programs were synthesized. Although this meta-synthesis provided an overview of cancer patients' experiences, it also gave visibility to the most targeted populations within exercise oncology because most of the included studies captured the perspectives of middle-aged patients (mean age <55 years in 5/8 studies) with breast cancer (121/174 participants).<sup>12</sup> In all, there is sparse evidence concerning the feasibility, effects, and patient experiences of exercise among older cancer populations and among patients with advanced cancer.<sup>11</sup>

Qualitative studies investigating attitudes toward exercise among older patients with both localized and advanced cancer have identified several barriers, including a high symptom burden, a busy treatment regimen, age-related medical conditions, and practical challenges.<sup>13,14</sup> Thus, recruitment, adherence, and retention of older patients with advanced cancer in exercise-based programs might be a challenge. Information about the lived experiences from older patients with cancer during participation in exercise-based interventions could provide valuable information regarding future rehabilitation and exercise strategies for older patients with advanced cancer.

The aim of this study was to provide insights into the experiences of older patients with advanced PC, BTC, or NSCLC who participated in a 12-week multimodal and exercise-based

intervention of the RCT "Patient Activation Through Counseling, Exercise, and Mobilization in Older Patients With Advanced Pancreatic, Biliary Tract, and Lung cancer" (PACE-Mobil-PBL),<sup>15</sup> including perceptions of motivation, facilitators, benefits, barriers, and/or risks.

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## ■ Design

A qualitative study using data from individual interviews and written evaluation questionnaires was conducted.

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## ■ Materials and Methods

### Research Context

In the period 2018 to 2020, we conducted the PACE-Mobil-PBL study. The content and methodology of this RCT have been described elsewhere.<sup>15</sup> The purpose of the study was to investigate the feasibility and effect of a 12-week multimodal intervention composed of the following 4 components: (1) team-based exercise twice weekly (mainly progressive resistance training combined with cardiovascular warm-up exercises and exercises for balance and flexibility), (2) a protein drink after each exercise session (type and flavor of participants' choice, 227-300 calories/12-20 g protein), (3) a home-based walking program using pedometers and individualized step-count goals, and (4) supportive and individualized nurse-led counseling based on identified needs.<sup>15</sup>

### Research Participants

Inclusion criteria for the PACE-Mobil-PBL study were (a) diagnosis of advanced PC, BTC, NSCLC within 3 months, (b) treatment with palliative systemic therapy at the Department of Oncology, Herlev and Gentofte Hospital, Denmark, and (c) age 65 years or older. Exclusion criteria were (a) physical or mental conditions that prevented participation based on safety concerns and (b) inability to speak Danish. Participants in the intervention group who completed evaluation testing after week 12, regardless of compliance rate, were recruited to this study.

### Data Collection

Eligible participants were contacted for interview scheduling by an experienced oncology research nurse (H.M.) who was not involved in the PACE-Mobil-PBL study. Individual semistructured interviews were conducted by H.M. at the hospital (n = 13), by telephone (n = 4), or in the participants' homes (n = 1) according

 **Table 1 • Interview Guide**

Research Topics	Interview Questions
Initial motivation for participation	Tell me about your decision to participate in the program
Experiences from participation in the PACE-Mobil-PBL program	What has it been like to participate in the program? <ul style="list-style-type: none"> <li>• Positive experiences [if any]?</li> <li>• Negative experiences [if any]?</li> <li>• What has been challenging [if anything]?</li> </ul> Tell me about your experiences with: <ul style="list-style-type: none"> <li>• The team-based exercise</li> <li>• The homed-based walking program</li> <li>• Support/advice from the nurse and physiotherapists</li> <li>• Protein drinks</li> </ul> Have you felt safe when performing the exercises?
Motivation to exercise during the program	What motivated you to exercise during your participation (team-based and home-based walking)?
Barriers	What (if anything) made it difficult to participate/perform in the exercise program?
Experienced gain from participation	What (if anything) have you gained from participating in the program?
Ideas for improvement	Do you have any suggestions on how to improve the program?
Closure	Would you recommend the program to other patients?

Abbreviation: PACE-Mobil-PBL, Patient Activation Through Counseling, Exercise, and Mobilization in Older Patients With Advanced Pancreatic, Biliary tract and Lung Cancer.

to participants' preferences. Interview data were collected using an interview guide (Table 1) and followed up by clarifying or elaborating questions to increase the credibility of the findings. Apart from the interviewer (H.M.) and each participant, no other persons were present during the interviews. The interviews were conducted within a short time after completion of the exercise program (median, 15 days; range, 0-42) and lasted median 25 minutes (range, 12-50). Interviews continued until the collected data were sufficient to answer the research questions. Evaluation questionnaires with open questions (Table 2) were completed by the participants immediately after completion of the intervention program and were filled out at a different location than the exercise setting (in a separate room or at home). Data from the questionnaires were used to supplement the interview data with the participants' self-selected input and evaluation immediately after intervention completion. Medical and demographic data were obtained from the original REDCap database.

## Ethics

The study was reported to and approved by the Scientific Ethics Review Committee of the Capital Region of Denmark (J.nr: H-18001096) and the Danish Data Protection Agency (J.nr: 2012-58-0004) and was conducted in accordance with the Helsinki Declaration. Consent for study participation was obtained before each interview.


## Data Analysis

Interviews were transcribed verbatim from audio recordings and were, along with data from the written evaluation questionnaires, analyzed using thematic analysis as described by Braun and Clark using a 6-step analysis process: (1) listening to recordings or reading the transcripts several times, (2) generating meaningful units, (3) searching for and identifying initial themes, (4) reviewing themes, (5) defining and naming themes, and (6) writing the report.<sup>16</sup> The

full qualitative thematic analysis was conducted in the software program NVivo by the primary investigator (M.K.M.) in triangulation with a senior researcher (M.J.) in analysis steps 3 to 4. The primary investigator was a nurse and PhD student with years of experience within cancer nursing and moderate experience conducting qualitative research. The senior researcher had an oncology nursing background with extensive experience within qualitative research. Descriptive statistics were calculated for all demographic and medical variables. Compliance rates were calculated separately for the team-based exercise (percentage of appearances) and for the home-based walking program (percentage of completed weeks with full 7-day step count).

## Results

In all, 20 participants were invited for interviews and 18 accepted. Two participants declined; 1 had no energy to participate because of severe side effects, and 1 declined because of long-term hospitalization. Filled-in evaluation questionnaires were completed by 14 of the interviewed participants. Medical and demographic characteristics are shown in Table 3.

 **Table 2 • Questions from the Written Evaluation Questionnaires**

Please tell us about your experiences from participation in the PACE-Mobil-PBL program. All experiences—good and bad—are appreciated and will help us to develop the most optimal exercise programs in the future.
What did you like about the program?
What did you not like about the program?
What could be improved in the program?
Additional comments:

Abbreviation: PACE-Mobil-PBL, Patient Activation Through Counseling, Exercise, and Mobilization in Older Patients With Advanced Pancreatic, Biliary tract and Lung Cancer.

**Table 3 • Medical and Demographic Characteristics of the Participants**

No./ID	Age	Sex	Treatment	ECOG PS	CCI	Living Status	Working Status	Adherence (%) <sup>a</sup>	
								TEAM	Walking
Group characteristics (n = 18)									
	Median (IQR)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	Median (IQR)	Median (IQR)
	71 (68-76)	Women: 9 (50)	CT: 15 (83) IT: 3 (17)	0: 7 (39) 1: 9 (50) 2: 2 (11)	0: 4 (22) 1: 5 (28) 2: 7 (39) ≥3: 2 (11)	Coliving: 10 (56) Alone: 8 (44)	Retired: 15 (83) Working: 3 (17)	77% (69-89)	83% (73-100)
Individual characteristics									
Non-small cell lung cancer (n = 7)									
1	69	Man	CT	1	2	Alone	Retired	75%	83%
2	70	Woman	CT	1	2	Alone	Retired	88%	83%
3	72	Man	CT	0	1	Alone	Retired	0%	0%
4	74	Woman	IT	1	3	Alone	Retired	83%	100%
5	74	Man	CT	0	1	Coliving	Retired	75%	92%
6	74	Man	IT	1	1	Coliving	Retired	63%	67%
7	82	Man	IT	0	0	Coliving	Retired	92%	75%
Pancreatic cancer (n = 9)									
8	65	Woman	CT	0	0	Alone	Retired	96%	100%
9	65	Man	CT	0	1	Coliving	Working part time	96%	83%
10	65	Woman	CT	0	0	Coliving	Retired	75%	100%
11	66	Woman	CT	2	2	Alone	Retired	46%	42%
12	70	Woman	CT	1	6	Coliving	Retired	79%	100%
13	70	Man	CT	1	2	Coliving	Working part time	88%	100%
14	80	Woman	CT	1	1	Coliving	Retired	38%	17%
15	83	Man	CT	1	2	Alone	Working part time	71%	75%
16	83	Woman	CT	1	0	Coliving	Retired	71%	92%
Biliary tract cancer (n = 2)									
17	70	Man	CT	0	2	Coliving	Retired	83%	100%
18	72	Woman	CT	2	2	Alone	Retired	96%	75%

Abbreviations: ID, identification number; ECOG PS, Eastern Cooperative Oncology Group Performance Status; CCI, Charlson Comorbidity Index; IQR, interquartile range; CT, chemotherapy; IT, immunotherapy.  
<sup>a</sup> Compliance rates for the TEAM (team-based) exercise is calculated as the percentage of appearances during the 12-week program (24 sessions). Compliance rates for the Walking (walking program) is calculated as the percentage of completed weeks during the 12-week program with full 7-day step count.

Although data from the written questionnaires mainly described how the program had benefited the participants, their satisfaction with the organization of the program, and what were the participants' preferred exercise activities, data from the interviews as well as gave in-depth information related to internal and external motivational factors and barriers.

From the full data analysis, 3 main themes were identified that expressed how the participants experienced being a part of the intervention program: (1) *Motivated to strengthen body and mind* with 2 subthemes: "Doing what only I can do" and "Reaching goals with support from healthcare professionals (HCPs) and peers"; (2) *Exercise as an integrated part of the treatment course*; and (3) *Overcoming undeniable physical limitations*.

## MAIN THEME 1: MOTIVATED TO STRENGTHEN BODY AND MIND

Whereas some had no doubts about accepting participation at the time of recruitment, others were unsure about their ability to participate. Many praised the open-minded attitude and approach from the primary investigator during recruitment, where it was emphasized and underlined that they could evaluate their participation week by week. This flexible approach was also practiced during the program, where it was fully accepted if participants did not wish to attend an exercise session in a treatment-free week or if they missed a week because of vacation. At enrollment, the participants were given a replacement program with a few effective exercises that they could perform at home if they could not attend an exercise session.

ID14: Too much illness and too many hospital visits aren't among my desires. So, I really appreciated the exercises that I could do at home. In those weeks where I did not have to go to the hospital, I preferred to do some exercises at home. (80-year-old woman with PC)

The participants described several benefits from exercising, including increased strength, improved physical endurance, and feeling more energetic. In addition, some participants felt a reduction in fatigue and in other symptoms (eg, pain, peripheral neuropathy, and dyspnea).

ID4: After chemotherapy and radiation I felt fatigued and had trouble breathing. Exercising had a major positive impact on my breathing difficulties. (74-year-old woman with NSCLC)

Even though different symptoms and side effects could negatively affect the participants' desire to exercise, many described how they felt better and uplifted after exercising. For some, the physical improvements impacted their daily lives and made everyday tasks more manageable.

ID10: I've had more energy to handle my daily activities. I've been more extroverted and participated in many activities. (65-year-old woman with PC)

As this quote also illustrates, some participants reported feeling a change in their social engagement during the program. Exercising and feeling physical improvements brought back the participants' confidence in their own abilities and increased their overall well-being.

## SUBTHEME 1: DOING WHAT ONLY I CAN DO

Although HCPs controlled the medical treatment, many participants expressed a desire to act. Whereas some described it as a supplementary effort to fight the cancer, others described it as a method to strengthen the body to withstand treatment.

ID8: Exercise is something that I can do. I cannot cure myself, but I CAN do this (voice is cracking). I think it's so important to have that counterplay. To feel physically strong, because that will also affect your mentality. And if you are physically strong, then you might tolerate the next treatment better. (65-year-old woman with PC)

This motivational drive was described both as a reason to accept participation in the program and a motivation to continue exercising throughout the 12 weeks. Some participants already knew about the potential physiological effects of exercise during cancer treatment before entering the program, and this knowledge increased their motivation to exercise.

Many participants reported having experienced substantial weight loss in the time up to and after the cancer diagnosis. Furthermore, levels of physical activity, related to both structured exercise and normal daily activities, had declined for many. Some of the participants were used to living an active lifestyle with sports, whereas others only performed low-intensity daily activities such as housekeeping or gardening.

ID12: I've always been very active. The cancer diagnosis was unexpected and totally knocked me out. I lost so much weight. But then I was offered to join this program. And when they told me that I was in [intervention group], I was just so happy. I could start getting my body back in shape. It's hard to do on your own. (70-year-old woman with PC)

Across previous levels of activity, the participants had a desire to regain their lost strength. For some, living an independent life for as long as possible was a motivation to exercise.

ID11: I need my body to keep on functioning. I live alone, so I must be able to get out of bed and to go to the toilet. That's my motivation to exercise. (66-year-old woman with PC)

## SUBTHEME 2: REACHING GOALS WITH SUPPORT FROM HCPs AND PEERS

The participants described how the physiotherapists and nurse motivated them during the exercise sessions. Being cheered on and pushed to work harder helped the participants to perform. Many described that they were able to exercise with a higher intensity than they had thought and that these successful experiences helped them to regain trust in their own physical capability. The physiotherapists and nurse also focused on the participants' daily activity levels. Particularly, the integrated walking program using pedometers with adjustable goal setting motivated most of the participants to be aware of their daily activity levels.

ID15: Some of my female workout companions walked 10,000 steps a day. I walk around 4,000 to 6,000 steps, and I do it every single day. The pedometer has kept me going

and has motivated me to go on planned walks. (83-year-old man with PC)

A few of the participants were not motivated by wearing pedometers and thus were not focused on this element of the program. However, reaching goals was commonly described as a motivating factor.

The participants highlighted the importance of having skilled instructors with wide professional knowledge and expertise. Hence, individual adjustments were essential and provided a foundation for a trustful trainer-client relation.

ID2: I felt a lot of improvement in the beginning. But then something happened in my body, that we were not prepared for, and it went in the other direction. Therefore, we had to adjust the machines and reduce the weights. I would like to thank the physiotherapists who adjusted the machines.

They were very supportive in that situation. (70-year-old woman with NSCLC)

As an integrated part of the program, nurse-led support and counseling based on individual needs were provided. This approach was particularly valued by some of the oldest and most frail participants. Some participants highlighted the importance of this holistic approach, because the nurse helped them to solve problems that would otherwise have challenged their ability to exercise.

ID11: If I was a bit wobbly that day and I needed to go to the laboratory for blood tests, then she [the nurse] would help me. When I had a problem with the community nurse, she picked up the phone and called them. I have been struggling to take care of myself. (66-year-old woman with PC)

Laughing and enjoying themselves were highlighted by the participants as being an important motivational factor to keep on exercising. For some, interaction with peers could feel a bit confrontational at first, but several participants mentioned the growing importance of sharing experiences and supporting each other.

ID13: Talking about the cancer wasn't easy for me at first. So, when a teammate approached me and said: "Hi, my name is x, I have this cancer. Where do you have cancer?" I was shocked. But I was positively surprised about all these people. Even though we were all sick and were so different in many other ways, we had so much fun together. People dared to open up, including myself. (70-year-old man with PC)

The exercise environment was described as positive, with room for open interaction and laughter. When talking about motivation and the supervised exercise program, the resistance training program was rarely mentioned. In contrast, the participants talked about many motivational aspects of the warm-up program, including playing different games and competing in small teams.

ID16: Sometimes we used the bicycles and pedaled for different intervals. And then we rushed to a table with a

puzzle and each placed one single piece, and then back to the bicycle again. They [the physiotherapists] really understood how to make the workout fun. (83-year-old woman with PC)

## MAIN THEME 2: EXERCISE AS AN INTEGRATED PART OF THE TREATMENT COURSE

Coordination with medical appointments at the hospital was frequently mentioned as a decisive factor for accepting participation. This coordination was especially essential for participants with PC or BTC, who were already at the hospital twice weekly in most weeks. Consequently, exercising for some became an integrated part of the treatment course.

ID17: On Mondays, I had the blood tests, exercised, and then went to the medical consultation. On Wednesdays, I went exercising and then got my chemotherapy. So, when I started that routine, it became a part of the treatment course. It was just as natural to do as getting the blood tests, seeing the oncologist and getting chemo. (70-year-old man with BTC)

Some participants with NSCLC who had medical appointments every third week preferred to exercise on days when they did not have other appointments. For some, the coordination with medical appointments positively influenced their adherence, because even on their "bad days," they had to go to the hospital and thus also attended the exercise sessions.

ID9: Those days when I felt awful. I could not really do anything, but I still showed up. If I could have stayed at home, I probably would not have left the house. But I still went, because I had to go to the consultation or chemotherapy. For sure, I did not perform optimally on those days, but I usually felt better afterwards. (65-year-old man with PC)

Some also described that exercising at the hospital made them feel safe because they knew that they were surrounded by HCPs who were informed about their cancer and treatment course.

ID2: I felt safe as it was all placed at the same location. It was my impression that they all knew what was going on—across the different departments. It provided security that the people around me all knew my story. (70-year-old woman with NSCLC)

## MAIN THEME 3: OVERCOMING UNDENIABLE PHYSICAL LIMITATIONS

One participant, who was dependent on transportation services, felt that the overall time costs challenged her exercise attendance, but no other practical circumstances were mentioned as being barriers to exercising. However, most participants mentioned symptoms and side effects that made exercising more difficult. Fatigue, in particular, reduced the desire to exercise and was sometimes the main reason for nonadherence. One participant was so affected by fatigue after receiving the first treatment that he never attended a single exercise session.

ID3: I felt so sick. Those side effects... After my very first chemo, I went home and slept for three weeks. That's the worst thing about the chemo—it's the fatigue. It's horrible. (72-year-old man with NSCLC)

Although the protein drinks were tolerated by most of the participants, others stated that they had difficulties with the drinks because of taste changes or nausea, and some simply did not enjoy the taste or texture. Thus, some of the participants wanted alternative options for protein supplements.

ID18: I drink them, but I do not like the taste. Nausea is a huge problem in having this disease. They taste synthetic. I tried a lot of different variants, but they were all the same. (72-year-old woman with BTC)

In addition to difficulty adhering to the supervised exercise program, experiencing severe symptoms also made it difficult for some to reach their individual step-count goals. The participants underlined the importance of being met with empathy and understanding from the physiotherapists on days when they were not able to perform as usual. Lack of understanding was noticed by a single participant who experienced such a situation.

ID16: There was one day, I was feeling so tired. I told the physiotherapist that I could not do anymore [exercising]. Then she said: "You cannot say that. I'm in charge here." We never talked about that. But I told x [the nurse], and I think that she did something about it. Because there were no problems after that situation. (83-year-old woman with PC)

Whereas experiencing sore muscles after exercising was common, 2 participants experienced exercise-related injuries. In 1 situation, a participant developed a swollen and painful knee after exercising. Consequently, 1 resistance exercise was excluded from her program, and the pain and swelling slowly subsided during the following weeks. More seriously, a patient experienced a snap in the back during exercising and was afterward diagnosed with osteoporotic spinal compression. Looking back on this incident, the participant felt that she had been pushed beyond her limits and therefore lost trust in the physiotherapists. Luckily, this participant was able to get back to the program only 1 week after her injury and completed the program without further problems.

ID4: .One of the physiotherapists pushed me to stretch my arms further back and forth, and I felt a snap. After that I allowed myself to decide how to do the exercises. (74-year-old woman with NSCLC)

Some participants expressed an increased need for exercise support as the cancer progressed and that they actually needed the program now (at the end of the program) more than ever. Although many happily accepted a referral to municipal rehabilitation after finishing the program, most stated that they would rather have kept on exercising with the PACE-Mobil-PBL team.

ID15: The program had one major flaw. It was too short. It should continue along with the treatment course. (83-year-old man with PC)

## ■ Discussion

This study provides information about the experiences of participating in an exercise-based intervention for older patients with advanced cancer. A number of benefits from participating in the program were identified, such as regaining strength and physical capacity, alleviating symptoms, and improved self-confidence. The motivational aspect of exercising to maintain physical function and independence is in accordance with other studies focusing on older and geriatric populations<sup>17,18</sup> and is in line with findings regarding older peoples' view of successful aging.<sup>19</sup> Furthermore, in line with results from the qualitative synthesis by Midtgaard et al,<sup>12</sup> our results also showed psychosocial benefits from exercise in an older cancer population, such as feeling empowered, feeling positive and uplifted, and enjoying and benefiting from social interaction.<sup>12</sup> Similarly, in a qualitative synthesis by Franco et al<sup>20</sup> focusing on older people's perspectives on participation in physical activity, social interaction with peers was valued by participants in 84 of 132 included studies (64%).

Several motivational factors that encouraged exercising were identified in the current study. Initially, the participants described a desire to do whatever they could do to improve their physical condition. For many, this motivation was the main reason for entering the program, but it also lasted throughout the intervention period. This desire to act, which arises after being confronted with cancer, is also described in other qualitative studies among patients with cancer.<sup>21–24</sup> However, the underlying goal behind this desire varied depending on cancer stage and prognosis, from goals of feeling healthy again and preventing recurrence among cancer survivors<sup>21,22</sup> to goals of physical gain to keep one going and/or living independently in studies focusing on patients with advanced cancer.<sup>23,24</sup>

Other motivational factors promoting exercising that were identified in the current study complied with findings from other studies focusing on patients with cancer, such as being instructed and encouraged by skilled HCPs,<sup>23,25–27</sup> experiencing peer support,<sup>21,23,25,27–29</sup> and setting and reaching goals.<sup>25</sup> Enjoyment was mentioned as a key motivational factor by most of the participants in our study. Feelings of enjoyment were mainly described in relation to the short warm-up program, where different games and fun exercises were used, and in relation to the interaction with instructors and peers. In a Danish qualitative study exploring exercise experiences among 26 patients with prostate cancer (mean age, 67 years) who participated in a 12-week football training program, enjoyment and playfulness were also mentioned as a key motivation to attend and adhere to the program.<sup>25</sup> The motivational force of enjoyment can be further elucidated using the Self-determination Theory and the Cognitive Evaluation Theory developed by Ryan and Deci.<sup>30</sup> It is suggested that 2 main types of motivation affect people in their actions: intrinsic and extrinsic motivation. Whereas extrinsic motivation is driven by external rewards or benefits, intrinsic motivation is a stronger and inner drive based on curiosity, exploration, and enjoyment.<sup>30</sup> In all, incorporation of fun activities in addition to focusing on effective exercises could be important in maintaining motivation among older patients with cancer.

Some identified factors facilitating adherence were in line with findings from other studies among patients with cancer, including having a structured program,<sup>23,28,31</sup> being instructed by physiotherapists with sufficient expertise,<sup>21,23,25,28,29</sup> and receiving a tailored program.<sup>23,28</sup> However, the most explicit facilitating factor in our study was coordination with medical appointments because it made exercising manageable for the participants. To our knowledge, concrete experiences with coordinated hospital appointments and exercise sessions in the hospital setting have not been described elsewhere. However, the importance of coordination of appointments can be supported by findings from a systematic review that investigated predictors of exercise adherence during cancer treatment, where it was found that having cancer in an advanced stage and/or receiving an extensive treatment were predictors of low adherence, whereas close location of exercise facilities was a predictor of high adherence.<sup>32</sup> Easy access to exercise facilities could be especially important in older cancer populations, owing to increased occurrence of fragility, comorbidity, and challenges with transportation.<sup>13</sup> In the qualitative synthesis by Franco et al<sup>20</sup> focusing on older people and physical activity, environmental barriers including transportation were reported in 72 (55%) of the included studies, suggesting that easy access to exercise is an essential facilitator in older populations. It should be noted that 83% of the informants in the current study were retired. Thus, patients' preferences related to location of exercise and/or coordination of exercise and oncological treatment may be different in a working population.

Feeling too ill and experiencing cancer-related symptoms were identified as barriers toward exercising in our study. As a high symptom burden is frequently seen among these patient populations,<sup>1,33,34</sup> complete elimination of symptoms is unrealistic. Participants who were frail due to physical deterioration and/or experienced severe symptoms stressed the benefits of being monitored and guided by a nurse during the intervention. Previous multimodal exercise-based interventions among patients with cancer have successfully been led by nurses and physiotherapists in close collaboration.<sup>35,36</sup> This interdisciplinary collaboration with integration of nurse-led symptom monitoring, guidance, and support may be particularly important when engaging older patients with cancer and a high symptom burden in exercise programs. Furthermore, comorbidities and age-related disabilities increase the importance of comprehensive support during participation in physical activity interventions. The nurse-led assessment in the current intervention was inspired by the concept of geriatric oncology and in particular by the comprehensive geriatric assessment,<sup>37</sup> which is increasingly being applied in the oncological setting. Because of the heterogeneity of the older cancer population, systematic assessments of this population's physical, functional, mental, emotional, and social status; identifications of needs; and provision of appropriate interventions could be of major importance in increasing feasibility of exercise-based interventions.

Our findings also indicated that lack of empathy or being pushed too hard could result in demotivation and distrust. Feelings of being forced beyond one's limits can be perceived as a violation of personal autonomy and could affect the participants' motivation. On the other hand, being cheered on and pushed in a positive way increased some participants' motivation.

According to Ryan and Deci,<sup>30</sup> competence, autonomy, and relatedness are 3 basic needs that are essential for human growth and well-being and, when satisfied, lead to enhanced self-motivation. Therefore, exercise guidance should be given in a way that supports the patient's competence and autonomy, for example, by providing optimal challenges and giving positive feedback.

## Strengths and Limitations

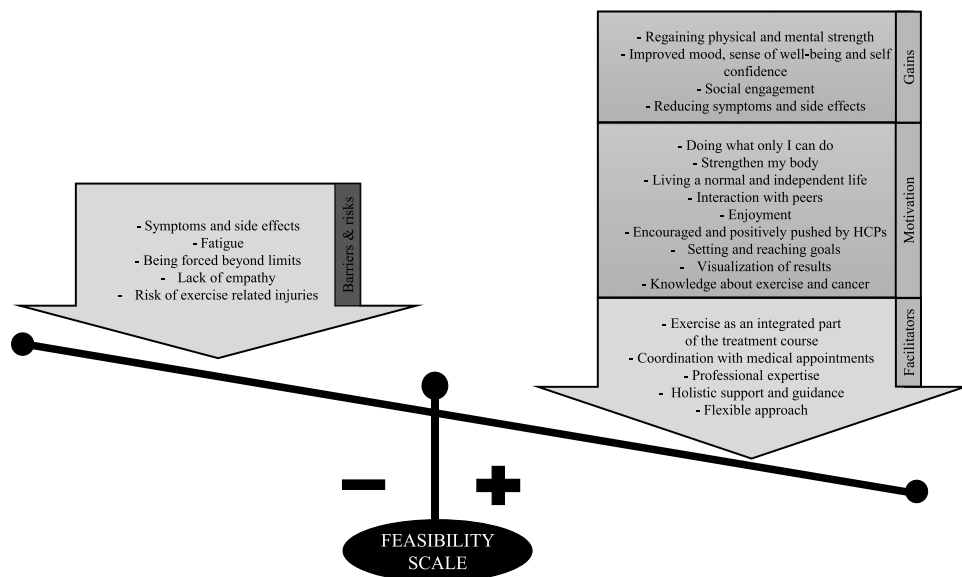
The sample size was determined by using the concept of "information power" as suggested by Malterud et al.<sup>38</sup> Information power was continuously evaluated during the study process and was influenced by a focused study aim (experiences from participating in a specific intervention program), specificity of the informants (intervention participants  $\geq 65$  years old with advanced cancer), and data quality (detailed statements). After 18 interviews, we assessed that the collected data could sufficiently answer the research questions.

Even though the study aim was to explore experiences among participants in the intervention group who had completed the 12-week testing program, it must be emphasized that inclusion of participants who dropped out could have provided a broader perspective—particularly regarding experienced barriers. However, dropouts were mainly caused by cancer progression, and because of ethical considerations, these participants were not asked for interviews. Engaging patients with advanced cancer in intervention programs includes a risk of dropout due to cancer progression or treatment-related adverse events regardless of the patient's physical state and fitness at time of inclusion. Patients' experiences and the ethical aspects of these cases are highly important and should be considered continuously throughout the research process. However, experiences from participants who dropped out (from any cause) were not included in this current study.

To increase the credibility of the data, a research nurse not involved in the PACE-Mobil-PBL program conducted all the interviews at a different location from the exercise setting. However, it cannot be ruled out that the participants still had a desire to provide positive answers owing to their relation to the HCPs in the exercise team. It was, however, emphasized that all experiences—good and bad—were valued to capture an accurate picture and to improve future programs. Furthermore, we used data triangulation to strengthen the credibility of the findings by using both individual interviews and evaluation questionnaires with open questions. Although questionnaires were filled out immediately after study completion and gave the participants the opportunity to contribute with their self-selected input, interviews were more focused because of the use of a semistructured interview guide and were conducted a median of 15 days after study completion, which thereby gave time for additional reflection about participation.

As data analysis was primarily conducted by the primary investigator (M.K.M.), who was also the study coordinator and nurse involved in the intervention program, there is a risk of bias arising from preunderstanding of the participants' experiences. To reduce the risk of bias in the analysis process, the primary investigator was curious about and open to unexpected findings





**Figure ■** Identified factors affecting feasibility. Summary of perceived motivational and facilitating factors, barriers, risks, and gains as identified in the current study focusing on older patients with advanced cancer participating in a multimodal exercise-based trial in the hospital setting. Each factor affected feasibility and should be considered in future programs.

and carefully followed the defined steps of the thematic analysis. Furthermore, researcher triangulation was used to increase credibility throughout the analysis process and was applied by involving a senior researcher who was not involved in the conduction of the PACE-Mobil-PBL, and results from the analysis were also critically reviewed by the study interviewer (H.M.).

## ■ Clinical Implications

To support feasibility of future exercise programs for similar populations, we suggest that programs should contain both effective and enjoyable activities and should be tailored to individual limitations and preferences. To make optimal solutions for vulnerable cancer populations, we suggest focusing on easy access to exercise—optimally coordinated with medical appointments when the exercise takes place at the hospital. Exercise programs targeting older cancer populations should be supervised by experienced physiotherapists and preferably by the same therapists throughout the program. A team-based approach and/or goal-setting could be used to increase motivation. A holistic multidisciplinary approach that included symptom monitoring, provision of advice on symptom management, systematic assessment of the older patients' health status and life situation, and provision of appropriate interventions based on identified needs could increase feasibility by promoting physical and mental well-being. Identified factors that influenced the feasibility of the program are illustrated in the Figure 1.

## ■ Conclusion

In this study, the experiences related to participating in a multimodal exercise-based program were investigated among older

patients with advanced cancer. The participants experienced several benefits from exercising, including physical improvements, increased energy, reduction of symptoms, and increased social engagement. Knowing about the potential effects of exercise, setting and reaching goals, visualization of results, being positively pushed and cheered on, and integration of fun and enjoyable games increased the participants' motivation. In contrast, being pushed beyond physical limitations, lack of empathy, and experiencing severe symptoms and side effects were experienced as being barriers to exercising. Coordination with medical appointments, being met with a flexible approach, and receiving a tailored program that included comprehensive support and guidance facilitated adherence to the program and overall satisfaction.

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